A TEAM MEMBER INVESTIGATION PROPOSAL FOR THE TARGETED SEARCH PROJECT OF THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE MICROWAVE OBSERVING PROJECT

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Final Report

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The Smithsonian Astrophysical Observatory
is a member of the
Harvard-Smithsonian Center for Astrophysics

Our efforts under this grant fell into two general categories: we worked on the characterization of lists of target stars for the Search for Extraterrestrial Intelligence (SETI), and we participated in studies of the future of space science and space exploration.

1. SETI Targets.

Dr. David W. Latham served on the Investigator's Working Group for the HRMS project until it was defunded by Congress. The IWG reviewed the progress on the project from time to time and rendered advice to the project management on issues of science and policy.

The SAO team took a lead role in the preparation of lists of target stars and their characteristics, with specific responsibility for the identification of those targets which have stellar companions which might interfere with the development of technical civilizations. Lists were prepared for three main categories of stars: The Nearest 100, the Best and Brightest, and the G Dwarfs. Altogether, more than 3400 stars were included in these lists. Existing catalogs were search to identify those stars with companions. In addition, thousands of new radial-velocity observations were made with the CfA Digital Speedometers, with the goal of identifying short-period binaries. By the end of the project, nearly 200 spectroscopic orbits had been derived from these observations.

Electronic copies of the target lists were provided to the HRMS project in December 1994. They were used to chose the targets observed with the HRMS equipment at the Parkes radio Telescope in Australia in early 1995.

2. Space Futures

We collaborated with the Mission From Planet Earth Study Office (MFPESO) on a variety of efforts connected with the future of space science and space exploration. Much of the day-to-day work was carried out by Ms. Linda Billings. Particularly significant was her organization of a high-level symposium on The Future of Space Exploration, which was held at the National Geographic Society in Washington in July 1994.

Dr. Latham served on the Lunar Observatory Steering Group, which prepared a report on the prospects for science on and from the moon.

3. Bibliography

The following papers were published in connection with this grant:

1993 Soderblom, D. R., and Latham, D. W. Target Selection Strategy for NASA's SETI/MOP. In the The Third Decennial USA-USSR Conference on SETI, ed. S. Shostak, Astron. Soc. Pacific Conf. Ser. Vol. 47, pp. 231-248.

1993 Latham, D. W., and Soderblom, D. R. Strategies for SETI Target Selection. In The Search for Extraterrestrial Intelligence (SETI) in the Optical Spectrum. SPIE Proc. 1867 (Bellingham, SPIE).

1994 Latham, D. W. and Geary, J. C. In Optical Astronomy from the Earth and Moon, eds. D. M. Pyper and R. J. Angione, Astron. Soc. Pacific Conf. Ser. Vol. 55, pp. 108-112.

1995 Henry, T. J., Soderblom, D. R., Baliunas, S. L., Davis, R. J., Donahue, R. A., Latham, D. W., Stefanik, R. P., Torres, G., Duquennoy, A., Mayor, M., Andersen, B., Nordstr^Tm, B., and Olsen, E. The Current State of Target Selection for NASA's High Resolution Microwave Survey. In Progress in the Search for Extraterrestrial Life, ed. G. S. Shostak, Astron. Soc. Pacific Conf. Ser. Vol. 74, pp. 207-217.